The existence of fossil plants as well as of fish-remains in the Devonian shales and sandstones of Scaumenac Bay was noticed by Dr. Abraham Gesner in 1842; and from these rocks Mr. Foord also obtained four species of ferns, which have recently been reported on by Principal Dawson.

The analogies between the fossil fauna of the fish-bearing beds of Scaumenac Bay and that of the Old Red Sandstone of Scotland and Russia are very striking. *Pterichthys canadensis* is still doubtfully distinct from the *Bothriolepis ornata* of Europe; the fragments of a *Diplacanthus* obtained by Mr. Foord have apparently much the same characters as the *D. striatus* of Agassiz; and the genus *Phaneropleuron* can now be shown to occur in the Devonian rocks of Canada as well as in those of Scotland. *Eusthenopteron* has many features in common with *Tristichopterus*; one species of *Glyptolepis* from Scaumenac Bay seems to be identical with the *G. microlepidotus* of Agassiz, from Lethen Bar, while the other bears a general resemblance to the *G. leptopterus* of the same author; and, lastly, *Cheirolepis canadensis* is certainly very closely allied to two Scotch species.

These Devonian rocks at Scaumenac may have been of freshwater or estuarine origin; for no traces of any marine invertebrata have yet been detected in any of them, and the fossil fishes which they contain are invariably found associated with land plants.—*Amer. Journ. Sci.*, June 1881.

Migrations of the Poplar-Aphis (Pemphigus bursarius, *Linn.*).
By M. J. Lichtenstein.

In August of last year* I had the honour to announce to the Academy that the Aphis of the woody galls of the poplar (*Pemphigus bursarius*, partim, Linn., sub *Aphis*), placed under a bell glass on its escape from the galls, upon a plant of *Filago germanica*, produced young which, having in their turn acquired wings, had furnished sexual insects, laying in abundance upon fragments of poplar-bark placed within their reach in my study.

These sexual forms, which had no rostrum, copulated and furnished numerous fecundated ova. I say numerous, because the females themselves were very numerous; for each of them, like all the Pemphiginæ of which I know the sexual forms, has only a single ovum in its body.

The copulation is preceded by several moults, which appear to me to be four in number. Although they had no mouth, and consequently could not feed, these little animals increased in size, like seeds put to soak. The male dies first, after having fecundated several females. When the female arrives at the moment of oviposition, we see issuing from her body very numerous white filaments,

* See 'Annals,' November 1880, p. 404.

which surround the egg, which is thus enclosed in a pith-like envelope of a secretion resembling spiders' threads. The secretory organs consist of two circlets of spinnerets placed on the sides of the abdomen, at the point occupied by the cornicles in the true Aphidinæ.

These eggs, kept through the winter, began to hatch in the first days of April; I then transported the fragments of bark bearing these little animals to a young poplar placed for the purpose in my garden, and upon which I had ascertained that there were no galls last autumn. This operation was effected in the first days of the month of April, before my departure to the meeting of the French Association at Algiers. On my return I hastened to look at my little tree, and found it garnished with small galls of *Pemphigus bursarius* (easily recognized by their position at the base of the young buds) already as large as green peas.

The test and counter tests having thus proved successful, I think that I may affirm that *Pemphigus filaginis* is only the gemmiparous and pupiferous form, *i. e.* the third and fourth forms of *Pemphigus bursarius*.

It may perhaps be objected that, the poplar being in the open air and incapable of being covered with a bell glass, some error may still be possible; but this seems to me difficult. Nevertheless I am already preparing plants of *Filago*, which I shall keep shut up and under bells until the month of July, so as to make a rearing in the room, sheltered from all external influences.

Moreover I have sent some of the same eggs which I have used in the above experiments to Mr. Riley at Washington, and to Mr. Monell at the Botanic Garden of St. Louis (Missouri); I am expecting information from them; and if I can give rise to the same galls on the poplar in America, this will be an unanswerable argument.—*Comptes Rendus,* May 2, 1881, p. 1063.

Metamorphosis of Pedicellina. By M. J. Barrois.

Most authors have hitherto supposed that the larva of *Pedicellina* passed directly into the adult by simple elongation of its lower part (the extremity of its aboral face), which became drawn out to form the peduncle. In 1877 I gave figures showing that matters did not go on in quite so simple a manner, and that, notwithstanding the great resemblance of the two forms, the larvæ of *Pedicellina*, like all the others, were subject to a period of very profound modifications. I was not then able to trace these modifications; but my recent thorough investigations of the subject enable me now to give a description of the passage, based upon observed facts.

I. *Fixation.*—The fixation takes place by the oral pole, and not, in accordance with the extant hypothesis, by the extremity (aboral pole) of the body.

II. The digestive tube, accompanied by a portion of the vestibule, undergoes a rotation from in front backwards. In consequence of